

AMENDMENTS TO THE CLAIMS:

The following listing of claims will replace all prior versions and listings of claims in the application.

1. (Currently amended) A method of detecting a clonal population of cells in a biological sample, ~~which clonal cells are characterised by a diagnostically distinctive nucleic acid region,~~ said method comprising co-localising ~~the subject nucleic acid regions~~ mitochondrial DNA derived from said sample, which co-localisation is based on nucleotide sequence identity, and qualitatively and/or quantitatively detecting the levels of said co-localised ~~nucleic acid regions~~mitochondrial DNA wherein a higher level of a co-localised ~~nucleic acid region~~mitochondrial DNA population relative to background levels is indicative of the presence of a clonal population of cells ~~in said sample~~ characteristic of a leukaemia, lymphoma, myeloma, myelodysplasia, polycythaemia vera or a myeloproliferative syndrome.
2. (Currently amended) A method for diagnosing and/or monitoring a clonal population of cells in a mammal, ~~which clonal cells are characterised by a diagnostically distinctive nucleic acid region,~~ said method comprising co-localising ~~the subject nucleic acid regions~~ mitochondrial DNA derived from a biological sample derived from said mammal, which co-localisation is based on nucleotide sequence identity, and qualitatively and/or quantitatively detecting the levels of said co-localised ~~nucleic acid regions~~ mitochondrial DNA wherein a higher level of a co-localised ~~nucleic acid region~~ mitochondrial DNA population relative to background levels is indicative of the presence of a clonal population of cells ~~in said sample~~ characteristic of a leukaemia, lymphoma, myeloma, myelodysplasia, polycythaemia vera or a myeloproliferative syndrome.
- 3-4. (Canceled)
5. (Currently amended) The method according to claim ~~[[4]]~~ 1 or 2 wherein said leukaemia is acute myeloid leukaemia or acute lymphoblastic leukaemia.

6-12. (Canceled)

13. (Currently amended) The method according to claim ~~[[12]]~~1 or 2, wherein said mitochondrial DNA is mitochondrial D loop DNA.

14. (Canceled)

15. (Currently amended) The method according to ~~any one of claims 1~~~~[[14]]~~or 2 wherein said co-localisation is achieved utilising any one of the techniques of:

- (i) Denaturing gradient electrophoresis.
- (ii) Temperature gradient denaturing electrophoresis
- (iii) Constant denaturing electrophoresis
- (iv) Single strand conformational electrophoresis
- (v) Denaturing high performance liquid chromatography
- (vi) Microassays
- (vii) Mass spectrometry

16. (Currently amended) The method according to claim ~~[[14]]~~1 or 2 wherein said co-localisation is achieved utilising denaturing gel or capillary electrophoresis.

17. (Currently amended) A method for diagnosing and/or monitoring ~~a mammalian disease condition characterised by the presence of a clonal population of cells, which clonal cells are characterised by a diagnostically distinctive nucleic acid region~~leukaemia, lymphoma, myeloma, myelodysplasia, polycythaemia vera or a myeloproliferative syndrome, said method comprising co-localising ~~the subject nucleic acid regions~~mitochondrial DNA derived from a biological sample derived from said mammal, which co-localisation is based on nucleotide sequence identity and qualitatively and/or quantitatively detecting the levels of said co-localised ~~nucleic acid regions~~mitochondrial DNA wherein a higher level of the co-localised ~~nucleic acid region~~mitochondrial DNA population relative to background levels is indicative of the presence of a clonal population of cells ~~in said sample~~characteristic of leukaemia, lymphoma, myeloma, myelodysplasia, polycythaemia vera or a myeloproliferative syndrome.

18-19. (Canceled)

20. (Currently amended) The method according to claim ~~[[19]]~~17 wherein said leukaemia is acute myeloid leukaemia or acute lymphoblastic leukaemia.

21-27. (Canceled)

28. (Currently amended) The method according to claim ~~[[27]]~~17 or 20, wherein said mitochondrial DNA is mitochondrial D loop DNA.

29. (Canceled)

30. (Currently amended) The method according to ~~any one of claims~~ ~~[[17-29]]~~17 or 20 wherein said co-localisation is achieved utilising any one of the techniques of:

- (i) Denaturing gradient electrophoresis.
- (ii) Temperature gradient denaturing electrophoresis
- (iii) Constant denaturing electrophoresis
- (iv) Single strand conformational electrophoresis
- (v) Denaturing high performance liquid chromatography
- (vi) Microassays
- (vii) Mass spectrometry

31. (Currently amended) The method according to claim ~~[[30]]~~17 or 20 wherein said co-localisation is achieved utilising denaturing gel or capillary electrophoresis.